Reviews

Soil Fertility and Permanent Agriculture. By Cyril G. Hopkins. 8vo. Pp. 23+653, ill. 14. Boston: Ginn & Co., 1910. $2.75.

This volume is a "summons and a challenge." It is dedicated to "The Association of American Agricultural Colleges and Experiment Stations, the rightful guardians of American soils." It is addressed to farmers and students of agriculture, who "have at least as good intellects as other classes of people." It is a book not written for entertainment, but to be studied, and it is well worth studying.

Part One has four chapters, largely foundation facts of chemistry; three chapters on soil formation, classification, and distribution; two chapters on soil survey and soil analysis by the United States Bureau of Soils, an excellent summary, with instructive maps; and three chapters on crop requirements in the principal soil compounds as plant foods. Part Two consists of six chapters devoted to permanent agriculture, showing the rôle of limestone, nitrogen, and phosphorus, the significance of rotation, and theories concerning soil fertility. Part Three is an excellent résumé of the best soil investigations by culture experiments, as carried on at Rothamstead, England, and at the leading American experiment stations, Pennsylvania, Ohio, Illinois, Minnesota, and others. Part Four is devoted to studies of various fertility factors; and the volume closes with an appendix of valuable statistical and other data ancillary to the text.

In the introduction the author says truly: "The most important material problem in the United States is to maintain the fertility of the soil, and no extensive agricultural country has ever solved the problem." And again, "If the art of agriculture has ruined the land, the science of agriculture must restore it, and the restoration must begin while some farmers are still prosperous, for poverty-stricken people are at once helpless, and soon ignorant, and poverty makes no investments."

The book is filled with the results of scientific studies, showing the elements removed from the soil by the growing crops, and the quantity there to be removed; showing the results of various fertilizers, and of various systems of rotation; showing that the key to permanent agriculture lies in phosphorus and decaying organic matter; and that good farming consists in an accurate bookkeeping with the soil.

It is shocking to learn that all the known phosphate deposits in the world will last at best only 250 years at the present rate of consumption; that America now furnishes two-thirds of the world's supply and sells half of it to foreign lands; while it would require our entire production of phosphates upon our own soil to give back to the soil what our corn crop alone takes from it.

The author is to be congratulated on producing a strong book in a very vital field. Its influence should be constructive in a high degree.

J. PAUL GOODE

Epitome of the Geology of New South Wales. By E. F. PITTMAN. Circular No. 9. Sydney: Mining and Geological Museum, 1909. Pp. 9, with geologic map.

This little pamphlet giving in a very brief, condensed form the principal features of the geology of this large Australian province has just come to the reviewer's attention. Those who frequently have occasion to familiarize themselves with the salient points in the geology of various portions of other continents often have longed for a series of just such outlines as this. To pick the desired information from separate volumes of a long array of standard geologic reports is a tedious and time-consuming task. A good map and the essential facts of a far-away country brought together and made available for ready use is a boon to every geologist who may have occasion to refer to that region. Now that geological studies are world-wide it is to be hoped that other countries and provinces will follow the example of New South Wales.

R. T. C.

Life and Letters of Josiah Dwight Whitney. By EDWIN TENNEY BREWSTER. Boston: Houghton Mifflin Co., 1909. Pp. 411, 18 illustrations.

In this biography the curtain is drawn aside and the reader is introduced intimately to one of the most conspicuous of the pioneers of American geology. When Whitney commenced his field work as an assistant on the first geological survey of New Hampshire in 1839, almost the whole of the United States was geologically an unknown land. The story of Whitney's life as it is unfolded in this book carries with it much of the history of several of the early surveys in which he took a leading part. These are the survey of the Lake Superior region (1847–50) which turned him from chemistry, toward which he had been preparing himself, to geology, and the Iowa State Survey, to which he was appointed in 1855 and which brought him